

State of California
California Regional Water Quality Control Board, Los Angeles Region

RESOLUTION NO. 02-017
October 24, 2002

**Amendment to the Water Quality Control Plan for the Los Angeles Region to
include a TMDL for Nitrogen Compounds and Related Effects in Calleguas Creek**

WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region, finds that:

1. The federal Clean Water Act (CWA) requires the California Regional Water Quality Control Board (Regional Board) to develop water quality standards which include beneficial use designations and criteria to protect beneficial uses for each water body found within its region.
2. The Regional Board carries out its CWA responsibilities through California's Porter-Cologne Water Quality Control Act and establishes water quality objectives designed to protect beneficial uses contained in the Water Quality Control Plan for the Los Angeles Region (Basin Plan).
3. Section 303(d) of the CWA requires states to identify and to prepare a list of water bodies that do not meet water quality standards and then to establish load and waste load allocations, or a total maximum daily load (TMDL), for each water body that will ensure attainment of water quality standards and then to incorporate those allocations into their water quality control plans.
4. Calleguas Creek was listed on California's 1998 section 303(d) list, due to impairment for nitrogen compounds and their effects that do not protect the most sensitive beneficial uses of the water body.
5. A consent decree between the U.S. Environmental Protection Agency (USEPA), Heal the Bay, Inc., and BayKeeper, Inc. was approved on March 22, 1999. The court order directs the USEPA to complete TMDLs for all the Los Angeles Region's impaired waters within 13 years.
6. The elements of a TMDL are described in 40 CFR 130.2 and 130.7 and section 303(d) of the CWA, as well as in USEPA guidance documents (e.g., USEPA, 1991). A TMDL is defined as "the sum of the individual waste load allocations for point sources and load allocations for nonpoint sources and natural background" (40 CFR 130.2). Regulations further stipulate that TMDLs must be set at "levels necessary to attain and maintain the applicable narrative and numeric water quality standards with seasonal variations and a margin of safety that takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality" (40 CFR 130.7(c)(1)). The regulations in 40 CFR 130.7 also state that

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TMDLs shall take into account critical conditions for stream flow, loading and water quality parameters.

7. Upon establishment of TMDLs by the State or USEPA, the State is required to incorporate the TMDLs along with appropriate implementation measures into the State Water Quality Management Plan (40 CFR 130.6(c)(1), 130.7). The Basin Plan, and applicable statewide plans serve as the State Water Quality Management Plans governing the watersheds under the jurisdiction of the Regional Board.
8. Calleguas Creek is located in Ventura County, California. It reaches from the Simi Hills east of the City of Simi Valley to Mugu Lagoon south of the City of Oxnard.
9. The Regional Board's goal in establishing the above-mentioned TMDL is to maintain the warm water fish and wildlife habitat (WARM, WILD) and groundwater recharge (GWR) beneficial uses of Calleguas Creek as established in the Basin Plan. Additionally, ammonia is known to cause toxicity to aquatic organisms.
10. Interested persons and the public have had reasonable opportunity to participate in review of the amendment to the Basin Plan. Efforts to solicit public review and comment include ten public workshops held between January 1999 and February 2002; public notification 45 days preceding the Board hearing; and responses from the Regional Board staff to oral and written comments received from the public.
11. The amendment is consistent with the State Antidegradation Policy (State Board Resolution No. 68-16), in that the changes to water quality objectives (i) consider maximum benefits to the people of the state, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies. Likewise, the amendment is consistent with the federal Antidegradation Policy (40 CFR 131.12).
12. The basin planning process has been certified as functionally equivalent to the California Environmental Quality Act requirements for preparing environmental documents and is, therefore, exempt from those requirements (Public Resources Code section 21000 et seq.), and the required environmental documentation and environmental checklist have been prepared.
13. The proposed amendment results in no potential for adverse effect (de minimis finding), either individually or cumulatively, on wildlife.
14. The regulatory action meets the "Necessity" standard of the Administrative Procedures Act, Government Code section 11353, subdivision (b).
15. The Basin Plan amendment incorporating a TMDL for nitrogen compounds and related effects for the Calleguas Creek watershed must be submitted for review and approval by the State Water Resources Control Board (State Board), the State Office of Administrative Law (OAL), and the US Environmental Protection Agency

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(USEPA). The Basin Plan amendment will become effective upon approval by OAL and USEPA. A Notice of Decision will be filed.

THEREFORE, be it resolved that pursuant to Section 13240 and 13241 of the Water Code, the Regional Board hereby amends the Basin Plan as follows:

1. Pursuant to sections 13240 and 13241 of the California Water Code, the Regional Board, after considering the entire record, including oral testimony at the hearing, hereby adopts the amendment to Chapter 7 the Water Quality Control Plan for the Los Angeles Region to incorporate the elements of the Calleguas Creek Nitrogen Compounds and Related Effects TMDL as set forth in Attachment A hereto.
2. The Executive Officer is directed to forward copies of the Basin Plan amendment to the SWRCB in accordance with the requirements of section 13245 of the California Water Code.
3. The Regional Board requests that the SWRCB approve the Basin Plan amendment in accordance with the requirements of sections 13245 and 13246 of the California Water Code and forward it to OAL and the USEPA.
4. If during its approval process the SWRCB or OAL determines that minor, non-substantive corrections to the language of the amendment are needed for clarity or consistency, the Executive Officer may make such changes, and shall inform the Board of any such changes.
5. The Executive Officer is authorized to sign a Certificate of Fee Exemption.
6. Amend the text in the Basin Plan, Plans and Policies (Chapter 5) to add:

"Resolution No. 02-017. Adopted October 24, 2002.
'Amendment to include a TMDL for Nitrogen Compounds and Related Effects for Calleguas Creek'
The resolution proposes a TMDL for nitrogen compounds and related effects in Calleguas Creek."
7. The Basin Plan amendment set forth in Attachment A shall only become effective if the water quality objectives revised by Regional Board Resolution 2002-011, or equivalent water quality objectives, have been approved by the OAL and USEPA, and are consistent with the TMDL.

I, Dennis A. Dickerson, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a resolution adopted by the California Regional Water Quality Control Board, Los Angeles Region, on October 24, 2002.

Original signed by
Dennis A. Dickerson
Executive Officer

Attachment A to Resolution No. 02-017

Proposed Amendment to the Water Quality Control Plan – Los Angeles Region

to Incorporate the

Calleguas Creek Nitrogen Compounds and Related Effects TMDL

Adopted by the California Regional Water Quality Control Board, Los Angeles Region on October 24, 2002.

Amendments

Table of Contents

Add:

Chapter 7. Total Maximum Daily Loads (TMDLs)

7-7 Calleguas Creek Nitrogen Compounds and Related Effects TMDL

List of Figures, Tables, and Inserts

Add:

Chapter 7. Total Maximum Daily Loads (TMDLs)

Tables

7-7 Calleguas Creek Nitrogen Compounds and Related Effects TMDL

7-7.1. Calleguas Creek Nitrogen Compounds and Related Effects TMDL:
Elements

7-7.2. Calleguas Creek Nitrogen Compounds and Related Effects TMDL:
Implementation Schedule

Chapter 7. Total Maximum Daily Loads (TMDLs)

Calleguas Creek Nitrogen Compounds and Related Effects TMDL

This TMDL was adopted by:

The Regional Water Quality Control Board on October 24, 2002.

This TMDL was approved by:

The State Water Resources Control Board on March 19, 2003.

The Office of Administrative Law on June 5, 2003.

The U.S. Environmental Protection Agency on June 20, 2003.

August 30, 2002

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Table 7-7.1. Calleguas Creek Nitrogen Compounds and Related Effects TMDL: Elements

Element	Calleguas Creek Nitrogen Compound and Related Effects																																																								
Problem Statement	Elevated nitrogen concentrations (ammonia, nitrite and nitrate) are causing impairments of the warm water fish and wildlife habitat, and groundwater recharge beneficial uses of Calleguas Creek. Nitrite and nitrate contribute to eutrophic effects such as low dissolved oxygen and algae growth. Ammonia contributes to toxicity.																																																								
Numeric Target (Interpretation of the numeric water quality objective, used to calculate the load allocations)	<p>Numeric targets for this TMDL are listed as follows:</p> <p>1. Total Ammonia as Nitrogen (NH₃-N)</p> <table border="1" data-bbox="443 798 1412 1438"> <thead> <tr> <th data-bbox="443 798 958 913"><i>Reach</i></th> <th colspan="2" data-bbox="958 798 1412 913"><i>NH₃-N concentration (mg/L)</i></th> </tr> <tr> <td></td> <th data-bbox="958 829 1104 913"><i>One-hour average</i></th> <th data-bbox="1104 829 1412 913"><i>Thirty-day average</i></th> </tr> </thead> <tbody> <tr><td>* Mugu Lagoon</td><td>8.1</td><td>2.9</td></tr> <tr><td>* Calleguas Creek, South</td><td>5.5</td><td>2.4</td></tr> <tr><td>* Calleguas Creek, North</td><td>8.4</td><td>3.0</td></tr> <tr><td>* Revlon Slough</td><td>5.7</td><td>2.9</td></tr> <tr><td>* Beardsley Channel</td><td>5.7</td><td>2.9</td></tr> <tr><td>* Arroyo Las Posas</td><td>8.1</td><td>2.6</td></tr> <tr><td>* Arroyo Simi</td><td>4.7</td><td>2.4</td></tr> <tr><td>* Tapo Canyon</td><td>3.9</td><td>1.9</td></tr> <tr><td>* Conejo Creek (Confluence with Calleguas Creek to Santa Rosa Rd.)</td><td>9.5</td><td>3.5</td></tr> <tr><td>* Conejo Creek (Santa Rosa Road to Thousand Oaks City Limit)</td><td>8.4</td><td>3.4</td></tr> <tr><td>* Conejo Creek, Hill Canyon Reach</td><td>8.4</td><td>3.1</td></tr> <tr><td>* Conejo Creek, North Fork</td><td>3.2</td><td>1.7</td></tr> <tr><td>* Arroyo Conejo (South Fork Conejo Creek)</td><td>5.1</td><td>3.4</td></tr> <tr><td>* Arroyo Santa Rosa</td><td>5.7</td><td>2.4</td></tr> </tbody> </table> <p>2. Nitrate and nitrite as nitrogen (NO₃-N and NO₂-N)</p> <table border="1" data-bbox="443 1501 1412 1669"> <thead> <tr> <th data-bbox="443 1501 958 1554"><i>Constituent</i></th> <th data-bbox="958 1501 1412 1554"><i>Concentration (mg/L)</i></th> </tr> </thead> <tbody> <tr><td>* NO₃-N</td><td>10</td></tr> <tr><td>* NO₂-N</td><td>1</td></tr> <tr><td>* NO₃-N + NO₂-N</td><td>10</td></tr> </tbody> </table> <p>Numeric targets to address narrative objectives required to protect warm freshwater and wildlife habitat are intended to implement the narrative objectives and may be revised based on the results of monitoring and special studies conducted pursuant to the implementation plan.</p>	<i>Reach</i>	<i>NH₃-N concentration (mg/L)</i>			<i>One-hour average</i>	<i>Thirty-day average</i>	* Mugu Lagoon	8.1	2.9	* Calleguas Creek, South	5.5	2.4	* Calleguas Creek, North	8.4	3.0	* Revlon Slough	5.7	2.9	* Beardsley Channel	5.7	2.9	* Arroyo Las Posas	8.1	2.6	* Arroyo Simi	4.7	2.4	* Tapo Canyon	3.9	1.9	* Conejo Creek (Confluence with Calleguas Creek to Santa Rosa Rd.)	9.5	3.5	* Conejo Creek (Santa Rosa Road to Thousand Oaks City Limit)	8.4	3.4	* Conejo Creek, Hill Canyon Reach	8.4	3.1	* Conejo Creek, North Fork	3.2	1.7	* Arroyo Conejo (South Fork Conejo Creek)	5.1	3.4	* Arroyo Santa Rosa	5.7	2.4	<i>Constituent</i>	<i>Concentration (mg/L)</i>	* NO ₃ -N	10	* NO ₂ -N	1	* NO ₃ -N + NO ₂ -N	10
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Source Analysis	The principal sources of nitrogen into Calleguas Creek are discharges from the POTWs in the watershed and runoff from agricultural activities in the watershed.																																																						
Linkage Analysis	Linkage between nitrogen sources and the in-stream water quality was established through a mass continuity model based on an evaluation of recent hydrodynamic and water quality data.																																																						
Waste Load Allocations (for point sources)	<p>The waste load allocations (WLAs) are as follows:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="3" style="text-align: left;"><i>POTWs</i></th> <th colspan="6" style="text-align: center;"><i>Concentration (mg/L)</i></th> </tr> <tr> <th style="text-align: center;"><i>MDEL¹</i></th> <th style="text-align: center;"><i>NH₃-N AMEL²</i></th> <th style="text-align: center;"><i>Daily WLA</i></th> <th style="text-align: center;"><i>NO₃-N</i></th> <th style="text-align: center;"><i>NO₂-N</i></th> <th style="text-align: center;"><i>NO₃-N + NO₂-N</i></th> </tr> <tr> <th style="text-align: center;"><i>(mg/L)</i></th> <th></th> <th style="text-align: center;"><i>(lb/day)</i></th> <th></th> <th></th> <th style="text-align: center;"><i>(mg/L)</i></th> </tr> </thead> <tbody> <tr> <td>• Hill Canyon WTP³</td> <td style="text-align: center;">5.6</td> <td style="text-align: center;">3.1</td> <td style="text-align: center;">254</td> <td style="text-align: center;">9.0</td> <td style="text-align: center;">0.9</td> <td style="text-align: center;">9.0</td> </tr> <tr> <td>• Simi Valley WQCF⁴</td> <td style="text-align: center;">3.3</td> <td style="text-align: center;">2.4</td> <td style="text-align: center;">220</td> <td style="text-align: center;">9.0</td> <td style="text-align: center;">0.9</td> <td style="text-align: center;">9.0</td> </tr> <tr> <td>• Moorpark WTP</td> <td style="text-align: center;">6.4</td> <td style="text-align: center;">2.6</td> <td style="text-align: center;">59</td> <td style="text-align: center;">9.0</td> <td style="text-align: center;">0.9</td> <td style="text-align: center;">9.0</td> </tr> <tr> <td>• Camarillo WRP⁵</td> <td style="text-align: center;">7.8</td> <td style="text-align: center;">3.5</td> <td style="text-align: center;">177</td> <td style="text-align: center;">9.0</td> <td style="text-align: center;">0.9</td> <td style="text-align: center;">9.0</td> </tr> <tr> <td>• Camrosa WRF⁶</td> <td style="text-align: center;">7.2</td> <td style="text-align: center;">3.0</td> <td style="text-align: center;">33</td> <td style="text-align: center;">9.0</td> <td style="text-align: center;">0.9</td> <td style="text-align: center;">9.0</td> </tr> </tbody> </table>	<i>POTWs</i>	<i>Concentration (mg/L)</i>						<i>MDEL¹</i>	<i>NH₃-N AMEL²</i>	<i>Daily WLA</i>	<i>NO₃-N</i>	<i>NO₂-N</i>	<i>NO₃-N + NO₂-N</i>	<i>(mg/L)</i>		<i>(lb/day)</i>			<i>(mg/L)</i>	• Hill Canyon WTP ³	5.6	3.1	254	9.0	0.9	9.0	• Simi Valley WQCF ⁴	3.3	2.4	220	9.0	0.9	9.0	• Moorpark WTP	6.4	2.6	59	9.0	0.9	9.0	• Camarillo WRP ⁵	7.8	3.5	177	9.0	0.9	9.0	• Camrosa WRF ⁶	7.2	3.0	33	9.0	0.9	9.0
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Load Allocation (for non point sources)	<p>The source analysis indicates that agricultural discharge is the major non-point source of oxidized nitrogen to Calleguas Creek and its tributaries. This source is particularly significant in Revolon Slough and other agricultural drains in the lower Calleguas watershed where there are no point sources of ammonia and oxidized nitrogen. Load allocations for non-point sources are:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><i>Nonpoint Source</i></th> <th style="text-align: center;"><i>NO₃-N + NO₂-N (mg/L)</i></th> </tr> </thead> <tbody> <tr> <td>Agriculture</td> <td style="text-align: center;">9.0</td> </tr> <tr> <td>Other Nonpoint Source</td> <td style="text-align: center;">9.0</td> </tr> </tbody> </table>	<i>Nonpoint Source</i>	<i>NO₃-N + NO₂-N (mg/L)</i>	Agriculture	9.0	Other Nonpoint Source	9.0																																																
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Implementation	<ol style="list-style-type: none"> 1. Refer to Table 7-7.2 2. Several of the POTWs in the Calleguas Creek watershed will require additional time to meet the nitrogen (NO₃-N, NO₂-N, and NO₃-N + NO₂-N) waste load allocations. To allow time to meet the nitrogen waste load allocations, interim limits will be allowed for a period of four years from the effective date of the TMDL during which the POTWs will be required to meet the effluent limit for NO₃-N + NO₂-N only. Effluent limits for the individual compounds NO₃-N and 																																																						

¹ MDEL: Maximum daily effluent limitation

² AMEL: Average monthly effluent limitation

³ WTP: Wastewater Treatment Plant

⁴ WQCF: Water Quality Control Facility

⁵ WRP: Water Reclamation Plant

⁶ WRF: Water Reclamation Facility

	<p>NO₂-N are not required during the interim period.</p> <p style="text-align: center;"><i>Interim Limits* for NO₃-N + NO₂-N</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;"><i>POTWs</i></th> <th style="text-align: center;"><i>Monthly Average (mg/L)</i></th> <th style="text-align: center;"><i>Daily Maximum (mg/L)</i></th> </tr> </thead> <tbody> <tr> <td>• Hill Canyon WTP</td> <td style="text-align: center;">36.03</td> <td style="text-align: center;">38.32</td> </tr> <tr> <td>• Simi Valley WQCF</td> <td style="text-align: center;">31.60</td> <td style="text-align: center;">32.17</td> </tr> <tr> <td>• Moorpark WTP</td> <td style="text-align: center;">31.5</td> <td style="text-align: center;">32.01</td> </tr> <tr> <td>• Camarillo WRP</td> <td style="text-align: center;">36.23</td> <td style="text-align: center;">37.75</td> </tr> </tbody> </table> <p>*The monthly average and daily maximum interim limits are based on the 95th and 99th percentiles of effluent performance data reported in the Calleguas Creek Characterization Study</p> <p>3. The waste load allocations for ammonia will be applicable on the effective date of the TMDL. Interim limits for ammonia will be applicable for no more than 2 years starting from October 24, 2002 for POTWs that are not able to achieve immediate compliance with the assigned waste load allocations. The interim limits for ammonia may be established at the discretion of the Regional Board when a POTW's NPDES permit is reissued.</p>	<i>POTWs</i>	<i>Monthly Average (mg/L)</i>	<i>Daily Maximum (mg/L)</i>	• Hill Canyon WTP	36.03	38.32	• Simi Valley WQCF	31.60	32.17	• Moorpark WTP	31.5	32.01	• Camarillo WRP	36.23	37.75
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<i>Margin of Safety</i>	An implicit margin of safety is incorporated through conservative model assumptions and statistical analysis. In addition, an explicit margin of safety is incorporated by reserving 10% of the load, calculated on a concentration basis, from allocation to POTW effluent sources.															
<i>Seasonal Variations and Critical Conditions</i>	A low flow critical condition is identified for this TMDL based on a review of flow data for the past twenty years. This flow condition was identified because less assimilative capacity is available to dilute effluent discharge.															

Table 7-7.2. Implementation Schedule

IMPLEMENTATION TASKS, MILESTONES AND PROVISIONS*		COMPLETION DATE
1. 2. 3.	WLA for ammonia apply to POTWs. Interim Limits for NO ₃ -N + NO ₂ -N apply to POTWs. Formation of Nonpoint Source BMP Evaluation Committee.	Effective Date of TMDL
4. 5.	Submittal of Non point Source Monitoring Workplan by Calleguas Creek Watershed Management Plan – Water Resources/Water Quality (CCWMP) Subcommittee. This monitoring is to evaluate nutrient loadings associated with agricultural drainage and other nonpoint sources. The monitoring program will include both dry and wet weather discharges from agricultural, urban and open space sources. In addition, groundwater discharge to Calleguas Creek will also be analyzed for nutrients to determine the magnitude of these loading and the need for load allocations. A key objective of these special studies will be to determine the effectiveness of agricultural BMPs in reducing nutrient loadings. Consequently, flow and analytical data for nutrients will be required to estimate loadings from nonpoint sources. Submittal of Watershed Monitoring Workplan by CCWMP Subcommittee. In addition to the analytical parameters and flow data requirements, the watershed monitoring program will establish sampling locations from which representative samples can be obtained, including all listed tributaries. Monitoring results will be compared to the numeric instream targets identified in this TMDL to determine the effectiveness of the TMDL. Data on the extent and distribution of algal mats, scum and odors will be included in the watershed monitoring program. The data will be	1 year after Effective Date of TMDL

* The CCWMP Subcommittee has offered to complete tasks 4 through 9 and 11. In the event the CCWMP Subcommittee fails to timely complete these tasks, the Regional Board will consider whether to amend this Implementation Plan to assign tasks to responsible dischargers in the regulatory approach. The Regional Board also reserves its right to take any other appropriate actions including, but not limited to, exercising its authorities under Water Code section 13267.

IMPLEMENTATION TASKS, MILESTONES AND PROVISIONS*		COMPLETION DATE
6.	<p>used to provide further verification of the model and refine the TMDL to address nutrient effects as appropriate.</p> <p>Submittal of Special Studies Workplan by CCWMP Subcommittee.</p> <p>These special studies include:</p> <p>Monitoring of minor point sources for nutrients to confirm assumptions that the loadings from these sources are minor;</p> <p>Monitoring of greenhouse discharges and runoff to assess loadings from these sources;</p> <p>Monitoring of groundwater extraction and discharges in the Arroyo Santa Rosa subwatershed and other areas that may add significant nutrient loadings to Calleguas Creek; and</p> <p>Additional studies of the type and extent of algae impairment in Calleguas Creek and Mugu Lagoon.</p>	
7.	Complete Special Studies for minor sources, greenhouses, and groundwater loadings.	3 years after Effective Date of TMDL
8.	Completion of ammonia Water Effect Ratio (WER) studies.	
9.	Complete planning and preparation for construction of TMDL remedies to reduce non-point source nitrogen loads.	
10.	Interim Limits for NO ₃ -N + NO ₂ -N expire and WLAs for NO ₃ -N, NO ₂ -N, NO ₃ -N + NO ₂ -N apply to POTWs.	4 years after Effective Date of TMDL
11.	Complete Special Studies for algae impairments of Calleguas Creek, its tributaries and Mugu Lagoon.	5 years after Effective Date of TMDL
12.	Regional Board consideration of revised water quality objectives for nitrogen compounds based on monitoring data, special studies, and ammonia WER, if appropriate.	6 years after Effective Date of TMDL
13.	Final achievement of ammonia and oxidized nitrogen standards.	7 years after Effective Date of TMDL